

What is claimed is:

1. A method for reconfiguring protocol data when reducing a multiplexed data stream, comprising the steps of:

receiving at a transcoder an inbound multiplexed data stream having:

an all-inclusive program association table (PAT) identified by a first packet identifier (PID);

and an all-inclusive protocol base PID stream identified by a second PID;

a plurality of pre-defined multiplexed data stream subgroups, each subgroup carrying one or more services;

one or more hidden PATs, each of said hidden PATs being associated with an allowable predefined combination of said multiplexed data stream subgroups and identified by a PID chosen from a first set of PIDs; and

a hidden protocol data (HPD) base PID stream corresponding to each hidden PAT, each HPD base PID stream identified by a PID chosen from a second set of PIDs;

selecting one hidden PAT corresponding to a desired multiplexed data stream subgroup combination;

determining the protocol data makeup of the desired multiplexed data stream subgroup combination from the HPD base PID stream corresponding to the selected hidden PAT;

discarding one or more of the all-inclusive PAT, the all-inclusive protocol base PID stream, any unused hidden PATs and HPD base PID streams, and any subgroups not contained in the desired multiplexed data stream subgroup combination;

re-mapping the selected hidden PAT to a first predetermined PID;

re-mapping the HPD base PID stream corresponding to the selected hidden PAT to a second predetermined PID; and

outputting the re-mapped PAT and the re-mapped HPD base PID stream from the transcoder with the desired multiplexed data stream subgroup combination.

2. A method in accordance with claim 1, wherein the first predetermined PID comprises the PID of the all-inclusive PAT.

3. A method in accordance with claim 1, wherein the second predetermined PID is the PID of the all-inclusive protocol base PID stream.

4. A method in accordance with claim 1, wherein:  
the all-inclusive PAT, the all-inclusive protocol base PID stream, any unused hidden PATs and HPD base PID

streams, and any subgroups not contained in the desired multiplexed data stream subgroup combination are discarded.

5. A method in accordance with claim 1, wherein the inbound multiplexed data stream comprises a plurality of multiplexed data streams.

6. A method in accordance with claim 5, wherein the plurality of multiplexed data streams are from a plurality of sources.

7. A method in accordance with claim 6, wherein the plurality of sources comprises two or more satellite feeds.

8. A method in accordance with claim 1, wherein the inbound multiplexed data stream is carried on a multiphase carrier having an I phase and a Q Phase.

9. A method in accordance with claim 8, wherein a first plurality of subgroups are carried in the I phase and a second plurality of subgroups are carried in the Q phase.

10. A method in accordance with claim 8, wherein:  
the all-inclusive PAT comprises:

an all-inclusive I phase PAT carried in the I phase corresponding to all services carried in the I phase; and

an all-inclusive Q phase PAT carried in the Q phase corresponding to all services carried in the Q phase; and

the all-inclusive protocol base PID stream comprises:

an all-inclusive I phase protocol base PID stream carried in the I phase corresponding to all services carried in the I phase; and

an all-inclusive Q phase protocol base PID stream carried in the Q phase corresponding to all services carried in the Q phase.

11. A method in accordance with claim 1, wherein the inbound multiplexed data stream is an MPEG data stream.

12. A method in accordance with claim 1, wherein the inbound multiplexed data stream is carried on one of a high data rate QPSK carrier or VSB carrier.

13. A method in accordance with claim 1, wherein the transcoder outputs an intermediate frequency data stream having a maximum data rate of about 27 Mbps.

14. A method in accordance with claim 1, wherein the transcoder outputs an intermediate frequency data stream having a maximum data rate of about 38.8 Mbps.

15. A method in accordance with claim 1, wherein each HPD base PID stream contains at least one of a system time table (SST), ratings region table (RRT), a master guide table (MGT), and a virtual channel table (VCT) for only those services present in an associated multiplexed data stream subgroup combination.

16. A method in accordance with claim 15, wherein the MGT lists every event information table (EIT) and event text table (ETT) contained in the inbound multiplexed data stream.

17. A method in accordance with claim 16, wherein the EITs and ETTs are retrieved from throughout the multiplexed data stream and passed as output with the selected multiplexed data stream subgroup combination.

18. A method in accordance with claim 17, wherein each EIT and each ETT has a unique PID.

19. A method in accordance with claim 1, wherein the protocol data comprises program service information protocol (PSIP) data.

20. A method in accordance with claim 1, further comprising the steps of constructing the inbound multiplexed data stream at an encoder.

21. A method in accordance with claim 20, wherein the step of constructing the inbound multiplexed data stream comprises the steps of:

creating the all-inclusive PAT, the all-inclusive protocol base PID stream, the hidden PATs, and the HPD base PID streams at the encoder; and

combining the all-inclusive PAT, the all-inclusive protocol base PID stream, the hidden PATs, and the HPD base PID streams with the multiplexed data stream subgroups to create the inbound multiplexed data stream.

22. Apparatus for reconfiguring protocol data when reducing a multiplexed data stream, comprising:

a transcoder for receiving an inbound multiplexed data stream having:

an all-inclusive program association table (PAT) identified by a first packet identifier (PID);

an all-inclusive protocol base PID stream

identified by a second PID;

a plurality of predefined multiplexed data stream subgroups, each subgroup carrying one or more services;

one or more hidden PATs, each of said hidden PATs being associated with an allowable predefined combination of said multiplexed data stream subgroups and identified by a PID chosen from a first set of PIDs; and

a unique hidden protocol data (HPD) base PID stream corresponding to each hidden PAT, each HPD base PID stream identified by a PID chosen from a second set of PIDs;

a processor associated with said transcoder for reconfiguring the protocol data for a selected multiplexed data stream subgroup combination; wherein:

said processor is coupled to receive from the transcoder said all-inclusive PAT, said all-inclusive protocol base PID stream, said hidden PATs, and said HPD base PID streams;

the processor is configured to select one hidden PAT corresponding to a desired multiplexed data stream subgroup combination;

the processor determines the protocol data makeup of the desired multiplexed data stream subgroup combination from the HPD base packet stream corresponding to the selected hidden PAT;

the processor discards one or more of the all-inclusive PAT, the all-inclusive protocol base PID stream, any unused hidden PATs and HPD PID streams, and any subgroups not contained in the desired multiplexed data stream subgroup combination;

the processor causes the transcoder to re-map the selected hidden PAT to a first predetermined PID;

the processor causes the transcoder to re-map the HPD base PID stream corresponding to the selected hidden PAT to a second predetermined PID; and

the transcoder outputs the re-mapped PAT and the re-mapped HPD base PID stream with the selected multiplexed data stream subgroup combination.

23. Apparatus in accordance with claim 22, wherein the first predetermined PID comprises the PID of the all-inclusive PAT.

24. Apparatus in accordance with claim 22, wherein the second predetermined PID is the PID of the all-inclusive protocol base PID stream.

25. Apparatus in accordance with claim 22, wherein:  
the all-inclusive PAT, the all-inclusive protocol base PID stream, any unused hidden PATs and HPD base PID



streams, and any subgroups not contained in the desired multiplexed data stream subgroup combination are discarded.

26. Apparatus in accordance with claim 22, wherein the inbound multiplexed data stream comprises a plurality of multiplexed data streams.

27. Apparatus in accordance with claim 26, wherein the plurality of multiplexed data streams are from a plurality of sources.

28. Apparatus in accordance with claim 27, wherein the plurality of sources comprises two or more satellite feeds.

29. Apparatus in accordance with claim 22, wherein the inbound multiplexed data stream is carried on a multiphase carrier having an I phase and a Q Phase.

30. Apparatus in accordance with claim 29, wherein a first plurality of subgroups are carried in the I phase and a second plurality of subgroups are carried in the Q phase.

31. Apparatus in accordance with claim 29, wherein:  
the all-inclusive PAT comprises:

an all-inclusive I phase PAT carried in the I phase corresponding to all services carried in the I phase; and

an all-inclusive Q phase PAT carried in the Q phase corresponding to all services carried in the Q phase; and

the all-inclusive protocol base PID stream comprises:

an all-inclusive I phase protocol base PID stream carried in the I phase corresponding to all services carried in the I phase; and

an all-inclusive Q phase protocol base PID stream carried in the Q phase corresponding to all services carried in the Q phase.

32. Apparatus in accordance with claim 22, wherein the inbound multiplexed data stream is an MPEG data stream.

33. Apparatus in accordance with claim 22, wherein the inbound multiplexed data stream is carried on one of a high data rate QPSK carrier or VSB carrier.

34. Apparatus in accordance with claim 22, wherein the transcoder outputs an intermediate frequency data stream having a maximum data rate of about 27 Mbps.

35. Apparatus in accordance with claim 22, wherein the transcoder outputs an intermediate frequency data stream having a maximum data rate of about 38.8 Mbps.

36. Apparatus in accordance with claim 22, wherein each HPD base packet stream contains at least one of a system time table (SST), ratings region table (RRT), a master guide table (MGT), and a virtual channel table (VCT) for only those services present in an associated multiplexed data stream subgroup combination.

37. Apparatus in accordance with claim 36, wherein the MGT lists every event information table (EIT) and event text table (ETT) contained in the inbound multiplexed data stream.

38. Apparatus in accordance with claim 37, wherein the EITs and ETTs are retrieved from throughout the multiplexed data stream and passed as output with the selected multiplexed data stream subgroup combination.

39. Apparatus in accordance with claim 38, wherein each EIT and each ETT has a unique PID.

40. Apparatus in accordance with claim 22, wherein the protocol data comprises program service information protocol (PSIP) data.

41. Apparatus in accordance with claim 22, further comprising an encoder for constructing the inbound multiplexed data stream.

42. Apparatus in accordance with claim 41, wherein:  
the encoder creates the all-inclusive PAT, the all-inclusive protocol base PID stream, the hidden PATs, and the HPD base PID streams; and

the encoder combines the all-inclusive PAT, the all-inclusive protocol base PID stream, the hidden PATs, and the HPD base PID streams with the multiplexed data stream subgroups to create the inbound multiplexed data stream.

43. A method for creating a multiplexed data stream which is to be reduced, comprising:

receiving a plurality of multiplexed data stream subgroups, each subgroup having one or more services;

creating an all-inclusive PAT identified by a first packet identifier (PID) and corresponding to all the services contained in the plurality of data stream subgroups;

creating an all-inclusive protocol base PID stream identified by a second PID and corresponding to all the services contained in the plurality of data stream subgroups;

defining a plurality of data stream subgroup combinations;

creating for each defined combination of data stream subgroups a hidden PAT identified by a PID chosen from a first set of PIDs, each hidden PAT corresponding to the services contained in said defined combination of data stream subgroups;

creating for each hidden PAT a corresponding hidden protocol data (HPD) base PID stream identified by a PID chosen from a second set of PIDs;

combining said all-inclusive PAT, said all-inclusive protocol base PID stream, said hidden PATs, said HPD base PID streams, and said data stream subgroups to create a multiplexed data stream.

44. Apparatus for creating a multiplexed data stream which is to be reduced, comprising:

an encoder; and

a processor associated with the encoder;

wherein:

the encoder receives a plurality of multiplexed data stream subgroups, each subgroup carrying one or more services;

the processor generates an all-inclusive PAT identified by a first packet identifier (PID) and corresponding to all the services contained in the plurality of data stream subgroups;

the processor generates an all-inclusive protocol base PID stream identified by a second PID and corresponding to all the services contained in the plurality of data stream subgroups;

the processor defines a plurality of data stream subgroup combinations;

the processor creates for each defined combination of data stream subgroups a hidden PAT identified by a PID chosen from a first set of PIDs, each hidden PAT describing the services contained in said defined combination of data stream subgroups;

the processor creates for each hidden PAT a hidden protocol data (HPD) base PID stream, each HPD base PID stream identified by a PID chosen from a second set of PIDs; and

the encoder combines said all-inclusive PAT, said all-inclusive protocol base PID stream, said hidden PATs, said HPD base PID streams, and said data stream subgroups to create a multiplexed data stream.